

Van de Wiele launches successfully the Handlook Carpet Pioneer HCPX2 for weaving carpets with a backside like handknotted carpets

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Introduction

The final aim of machine made carpets has always been to come so close to handmade carpets that no difference can be seen. The Van de Wiele company has made important developments during the last couple of years.

By increasing the reed density from reed 320 dents/m over 500 dents/m to 700 dents/m, the design definition and the number of points in woven carpets are increasing. The new Jacquard generation allows at the same time increasing the number of colours to 8 or 10 so that the same designs as in handmade carpets can be woven.

New three rapier weave structures improve the backside of the carpet so that no warp yarns are visible at the back side of the carpets.

The Handlook Carpet Pioneer HCP X2 machine combines above aspects to weave, at a high production rate, carpets with a hand look backside in different qualities.

The three rapier handlook weave structure

One of the first weave structures that has been developed for weaving high quality carpets in reed 700 dents/m is the Crystal Point (figure 1a) and the Hand Look HLX weave structure (figure 1b). These three rapier weave structures give a crystal sharp design on the pile side and a very clear back side where the Hand Look HLX weave structure is even not showing warp yarns.

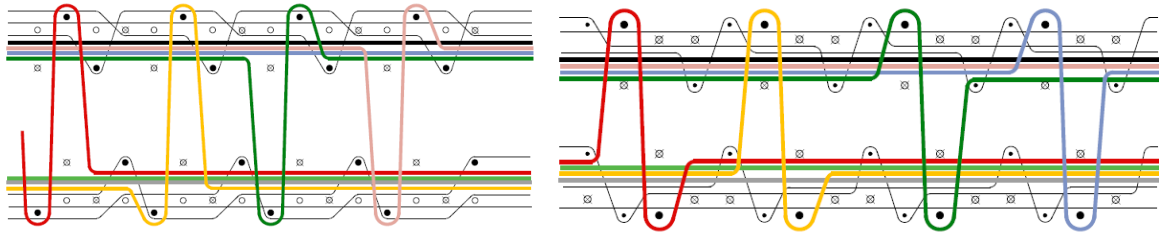


Figure 1a: three rapier Crystal Point weave structure

Figure 1b: three rapier HLX Handlook weave structure with no visible warp yarns

These weave structures give perfect carpets, however, the production is limited as only 2 pile rows (one in top and one in bottom carpet) are woven in 4 machine revolutions.

By developing the handlook HCP X2 weave structure (figure 2), Van de Wiele has been able to create carpets with a crystal sharp pile side and a handlook backside (no warps visible) and at a high production rate.

This patented three rapier weave structure gives double production compared to the crystal point and HLX weave structure as 2 pile rows (one in top and one in bottom carpet) are woven in 2 machine revolutions.

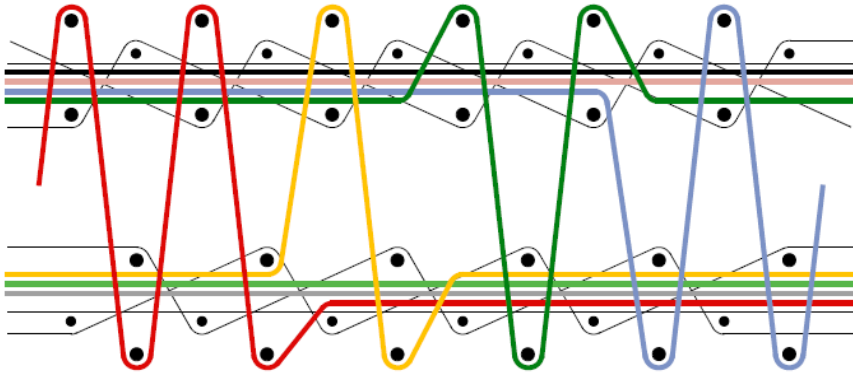


Figure 2: the handlook HCP X2 weave structure, woven with three rapiers, giving double production with no visible warp yarns at the back side of the carpet; pile and back side of HCP X2 carpet in reed 700 d/m

The three rapier technique gives many advantages. As only the working pile yarns are moving and the incorporated yarns are stationary, the machine has a higher weaving efficiency and the carpets have a cleaner back side. The incorporated pile yarn is perfectly straight, reducing the consumption of dead pile.

All pile tufts are going to the backside of the carpet, this results in a perfect pile fixation and a clear design on pile and back side (figure 3). The designs can be made in ratio 1 (one design line results in one pile row). Thanks to the three rapiers, some colour switches can be made over the inside pick. The advanced and intelligent Design Master in the We@velink software system eliminates automatically possible mix-contours and double points in the carpet design. When respecting design rules and using above software, a perfect design on the pile side is possible, even in ratio 1.



Figure 3: Back side and pile side of a carpet in reed 700 d/m, woven on the three rapier Handlook Carpet Pioneer HCP X2 machine

With three rapiers, the incorporated pile yarn is not moving. Therefore, it is possible to use thicker pile yarns. When using thicker pile yarns, the pick density can be reduced. When weaving however the

HCP X2 weave structure in ratio 1, it is possible to weave carpets with the same number of design points at a double production rate.

The HCP X2 weave structure is used in a reed density from reed 300 d/m up to reed 700 d/m and from 6 up to 10 colours. The HCP X2 machine can weave carpets with up to 1.400.000 points/m², where all pile tufts are going through the back of the carpet.

The Handlook Carpet Pioneer HCP X2 weaving machine

The Handlook Carpet Pioneer HCP X2 (figure 4) is a three rapier carpet weaving machine that has been especially developed for weaving handlook carpets with the above mentioned weave structure. The machine is based on the Carpet & Rug Pioneer generation which is a strong and rigid machine, adapted for high speed as well as heavy quality carpets.



Figure 4: the three rapier Handlook Carpet Pioneer HCP X2 machine

The enhanced and reinforced HCP X2 Jacquard machine gives, with one solenoid per harness band, the 4 positions that are required for three rapier weaving. The asymmetric settings and the unique possibility to put the pile yarns in layers, increase the efficiency and allow using thicker pile yarns. A filling selector with 4 servomotors present alternatingly a thick and a thin filling to the outside rapiers.

The cams for the reed and the rapier motion have been designed with special motions reducing vibrations and increasing the weaving efficiency.

According to the desired reed density (from 300 dents/m up to 700 dents/m) and the number of colours (from 6 to 10), the HCP X2 machine is available in a width of 3m, 4m or 5m. For reed 700 d/m and 8 colour frames, a physical reed of 700 dents/m is used, resulting in a regular distribution of pile tufts on the back side of the carpet.

The machine can handle all kinds of pile yarn like wool, acrylic, polyester, polypropylene, silk, viscose,...

Van de Wiele has sold worldwide already more than 50 Handlook Carpet HCP X2 machines for weaving different qualities.

Weaving handlook on double rapier

Van de Wiele has focused the development of handlook qualities on the three rapier machine because weaving with three rapiers has many advantages. As only the working pile yarn is moving and the

incorporate pile yarn is stationary, the machine has higher weaving efficiency, the incorporated pile yarn is straight, the back side is clearer and the machine can handle thicker yarns.

It is also possible to weave handlook qualities on a two rapier machine, however, with several disadvantages.

A first option is to weave the handlook weave structure in a 1/3 V or a three shot weave structure (figure 5). This will result in a nice pile and back side. In this weave structure, 2 pile rows are woven in 3 machine revolutions. However, the HCP X2 weave structure weaves 2 pile rows in 2 machine revolutions resulting in 50% more production than the two rapier weave structure in 1/3 V. Therefore the two rapier weaving technique can not compete with the three rapier HCP X2 technique.

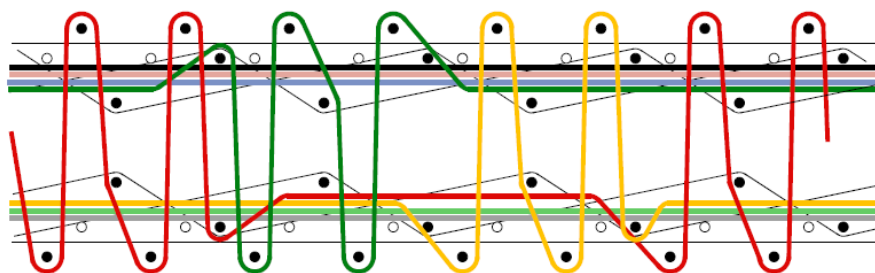


Figure 5: patented (Van de Wiele) handlook weave structure in 1/3 V, woven with two rapiers with 50% less production than HCP X2 weave structure with three rapiers

A second option is to weave the handlook weave structure on a two rapier machine in 1/2 V. In this weave structure, 2 pile rows are woven in 2 machine revolutions, resulting in theory in the same production as the HCP X2 (although efficiency on two rapier is lower because all yarns are moving). However, the pile and back side of this two rapier carpet will never be as clean as the three rapier carpet as several pile colour switches will result in mix-countours and double points (figure 6).

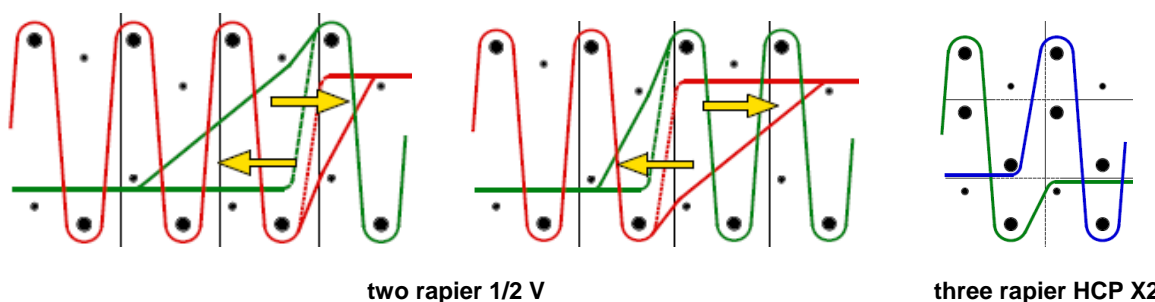


Figure 6: double points and mix-countours when weaving handlook in 1/2 V on two rapier machine, compared to perfect pile and back side when weaving with three rapiers HCP X2 (due to third filling)

In general, the three rapier HCP X2 weave structure gives perfectly straight vertical lines as each pile tuft is made around 2 fillings that are positioned on top of each other (see detail right side of figure 6). When weaving the three shot weave structure on a two rapier machine, the vertical lines are disturbed by the third filling that is positioned next to the pile tuft and so pushing it in a certain direction (see figure 5).

Conclusion

For weaving handlook carpets in different qualities (from reed 300 d/m up to reed 700 d/m), the Handlook Carpet Pioneer HCP X2 machine is the most suitable and productive machine.

Due to the unique three rapier HCP X2 weave structure, carpets with a crystal sharp pile side and a clear backside with no visible warp yarns can be woven. The three rapier technique gives at the same time 50% more production than a similar three shot weave structure woven on a double rapier machine. The numerous references in Iran, Turkey, Belgium, China,... prove that Van de Wiele has been again the pioneer in developing new qualities. The continuous development help the carpet producers to be competitive in the market.